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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,705	09/19/2001	Robert W. Griffiths	1160-3912.1U	7403

7590 07/28/2005

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EXAMINER	
JACKSON, ANDRE K	
ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/889,705	GRIFFITHS ET AL.	
	Examiner	Art Unit	
	André K. Jackson	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 16-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 16-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 21-29 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claims 21-29, Applicants have amended the claims to include the limitation of "decreasing a fluid level within a fluid level..." There is no disclosure as to what and how this decreasing is done. Applicants have not disclosed where this limitation is found within the specification. Clarification and correction is needed.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-6,13,14,16,17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larson in view of Cohen et al.

Regarding claim 1, Larson discloses in the patent entitled "Apparatus for detecting the presence of water in a fuel tank" which has a sensor with mutually cooperative first and second electrodes (12,20) arranged on the container in isolation from the interior of the container and having a vertical dimension and a horizontal dimension and where at least a majority of their areas are both vertically and horizontally offset from each other (Figure 2). Larson does not disclose rapid detection of a decreasing level of the viscous fluid in the container when the viscous fluid has reached a level proximate lower edge of the first, upper electrode and a residual film of the viscous fluid remains on an inner surface of the wall of the container above the level of the viscous fluid and adjacent at least a portion of the first, upper electrode. However, Cohen et al. disclose rapid detection of a decreasing level of the viscous fluid in the container when the viscous fluid has reached a level proximate lower edge of the first, upper electrode and a residual film of the viscous fluid remains on an inner surface of the wall of the container above the level of the viscous fluid and adjacent at least a portion of the first, upper electrode (Abstract, Figures 1,2,3,4,6,7 Column 1, lines 20-22, Column 2, lines 39-66, Column 8, lines 1-10, Column 10, lines 66-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson to include a measurement of rapid detection of a decreasing level of the viscous fluid in the container when the viscous fluid has reached a level proximate lower edge of the first, upper electrode and a residual film of the viscous fluid remains on an inner surface of the wall of the container above the level of the

viscous fluid and adjacent at least a portion of the first, upper electrode. By adding this feature the apparatus would be able to alert a nurse at the as to the amount of blood or other fluid in the container.

Regarding claim 2, Larson discloses where the first (12) and second electrodes (20) are substantially both vertically and horizontally offset from each other respectively (Figure 2).

Regarding claim 3, Larson discloses where the first (12) and second (20) electrodes are both completely vertically and horizontally offset from each other respectively (Figure 2).

Regarding claim 4, Larson discloses where the first and second electrodes are both vertically and horizontally spaced from each other respectively (Figure 2).

Regarding claim 5, Larson discloses where the electrodes comprise substantially two-dimensional plates respectively (Figures 2).

Regarding claim 6, Larson discloses where a conductor is coupled to first and second electrodes (Figure 2).

Regarding claim 13, Larson discloses at least one alarm responsive to an output signal from the sensor (31).

Regarding claim 14, Larson discloses where the electrodes are horizontally spaced (Figure 2).

Regarding claim 16, Larson discloses where the first and second electrodes are placed on a wall of the container (Figure 2).

Regarding claim 17, Larson does not disclose a mounting structure can be used to affix the first and second electrodes (Column 3, lines 18-32).

Regarding claim 20, Larson does not disclose where the electrodes are placed within the wall of the container. However, Cohen et al. disclose where the electrodes are placed within the wall of the container (Column 4, lines 66-67 and column 5, line 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson to include where the electrodes are placed within the wall of the container. By adding this feature the electrodes would be free from being dislodge from the tank when placed on the outside of the tank.

5. Claims 7,8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (4389889) in view of Cohen et al. and in further view of Larson (4201085).

Regarding claim 7, Larson (4389889) does not explicitly disclose where the conductors are connected to control circuitry. However, Larson (4201085) discloses an "Apparatus for determining the liquid level in a tank" which teaches where the conductors are connected to control circuitry (Figures 1-2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson to include where the conductors are connected to control circuitry. By adding the circuitry the user would be able to regulate the frequency of the circuitry for measuring the amount of fluid in the container.

Regarding claim 8, Larson does not explicitly disclose a "ZIF" connector, however, it is well within the purview of the skilled artisan to include a "ZIF"

connector. Various connectors can be substituted to increase the signal and decrease unwanted noise in the invention.

Regarding claim 12, Larson does not explicitly disclose a control circuitry that is configured to detect a change in capacitance of the sensor. However, Larson discloses control circuitry configured to detect a change in capacitance of the sensor (Figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Larson to include control circuitry configured to detect a change in capacitance of the sensor. By adding this feature the artisan would be able to change the capacitance to continuously monitor fluid level.

6. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larson in view of Cohen et al. and in further view of Hannan et al.

Regarding claims 9,10 and 11, Larson discloses an oscillating signal does but not disclose where the control circuitry is coupled to one of the first and second electrodes and configured to supply an oscillating signal having a frequency greater than 1MHz, at least 4MHz and at least 8MHz to one of the electrodes coupled to a reference voltage. However, Hannan et al. disclose a "Digital liquid level sensing apparatus" which has control circuitry configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes coupled to a reference voltage (Column 5, lines 31-34;Column7, lines 7-37;Column 9). Therefore, to modify Larson to include where the control circuitry is configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes coupled to a reference voltage would

have been obvious to one of ordinary skill in the art at the time of invention since varying the frequency near the upper range gives better results.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larson in view of Cohen et al. and in further view Jackson.

Regarding claim 18, Larson does not disclose where the mounting structure is a thin electrically insulative film. However, Jackson discloses a "Liquid level sensor and electrode assembly therefore" which teaches mounting structure is a thin electrically insulative film (Column 8, line 36). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Larson to include where the mounting structure is a thin electrically insulative film. Adding the film makes it easier for the sensors to stay in place when attached to an i.v. bag.

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larson in view of Cohen et al. and Jackson and in further in view of Paglione.

Regarding claim 19, Larson discloses where the thin electrically insulative film is Mylar. However, Paglione discloses a "Method and apparatus for detecting liquid composition and actual liquid level" which has a thin electrically insulative film is Mylar (Column 6, lines 25-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Larson to include where the thin electrically insulative film is Mylar as taught by Paglione since mylar is flexible and ideal to use with flexible containers.

9. Claims 21-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larson in view of Hannan et al. and Cohen et al.

Regarding claim 21, Larson discloses a sensor with mutually cooperative and isolated first and second electrodes arranged on the wall of the container in isolation from the interior of the container and having a vertical dimension and a horizontal dimension, where at least a majority of their areas are both vertically and horizontally offset from each other (12,20; Figure 2). Larson does not disclose where the control circuitry is configured to supply a signal having a frequency greater than 1 MHz, at least 4 MHz and at least 8 MHz to one of the electrodes. However, Hannan et al. disclose where the control circuitry is configured to supply a signal having a frequency greater than 1 MHz, at least 4 MHz and at least 8 MHz to one of the electrodes (Column 5, lines 31-34;Column 7, lines 7-37;Column 9). Therefore, to modify Larson to include where the control circuitry is configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes would have been obvious to one of ordinary skill in the art at the time of invention as taught by Hannan et al. since varying the frequency near the upper range gives better results. Larson does not disclose adjusting a fluid level within the container. However, Cohen et al. disclose decreasing a fluid level within the container at a rate sufficient to leave a residual film of the viscous fluid on an interior surface of the wall above the level of the viscous fluid and at least proximate a lower edge of the first upper electrode; and rapidly detecting a change in the output signal responsive to the decreasing of the fluid level (Column 11, line 15; Figures 1,2,4,6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson to include decreasing a fluid level within

the container at a rate sufficient to leave a residual film of the viscous fluid on an interior surface of the wall above the level of the viscous fluid and at least proximate a lower edge of the first upper electrode; and rapidly detecting a change in the output signal responsive to the decreasing of the fluid level. By adding this feature the user would be able to decrease the flow rate of the fluid according to specific needs.

Regarding claim 22, Larson does not disclose where the electrodes are placed within the wall of the container. However, Cohen et al. disclose where the electrodes are placed within the wall of the container (Column 4, lines 66-67 and column 5, line 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson to include where the electrodes are placed within the wall of the container. By adding this feature the electrodes would be free from being dislodge from the tank when placed on the outside of the tank.

Regarding claim 25, Larson does not disclose where the first and second electrodes are placed on a wall of the container with adhesive. However, Cohen et al. disclose where the first and second electrodes are placed on a wall of the container with adhesive (Column 2, line 59). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson to include where the first and second electrodes are placed on a wall of the container with adhesive. By adding this feature the apparatus would be able to keep

the electrodes on to the container without having the electrodes fall from the container.

Regarding claims 23 and 24, Larson does not disclose where the control circuitry is configured to supply a signal having a frequency greater than 1 MHz, at least 4 MHz and at least 8 MHz to one of the electrodes. However, Hannan et al. disclose where the control circuitry is configured to supply a signal having a frequency greater than 1 MHz, at least 4 MHz and at least 8 MHz to one of the electrodes (Column 5, lines 31-34;Column7, lines 7-37;Column 9). Therefore, to modify Larson to include where the control circuitry is configured to supply a signal having a frequency greater than 1 MHz, at least 4 MHz and at least 8 MHz to one of the electrodes would have been obvious to one of ordinary skill in the art at the time of invention since varying the frequency near the upper range gives better results.

Regarding claim 26, Larson discloses forming the capacitive structure on the wall (Figure 2).

Regarding claims 27 and 28, Larson does not disclose where the output signal exceeds a reference signal and an alarm is initiated once the output signal exceeds the reference signal. However, Cohen et al. disclose where the output signal exceeds a reference signal and an alarm is initiated once the output signal exceeds the reference signal (Column 5, lines16-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson to include where the output signal exceeds a reference signal and an

alarm is initiated once the output signal exceeds the reference signal. By adding this feature the operator would be able to determine when the tank is near empty.

Regarding claim 29, Larson discloses where the alarm is a visual alarm (31).

Response to Arguments

10. Applicant's arguments with respect to claims 1-8,12-14 and 16-20 have been considered but are moot in view of the new ground of rejection.

Applicants have noted "that the Oota et al. Shell International and KDI Precision references have apparently not been officially made of record according to Applicants' file. It is further noted that the referenced Supplemental Information Disclosure Statement was in fact received by the Examiner, as the Oota et al. reference was relied upon in the Office Action of October 21, 2003 but no copy of the form PTO/SB/08A filed September 16, 2003 was returned with that Office Action". The Examiner has supplied all of the Information Disclosure Statements in the case. The Applicants should note the date in which the September 16, 2003 form PTO/SB/08A was signed and considered. It should have been mailed with the Office Action on 10/21/03 in case it was not and any other IDSs were not mailed they are all being furnished to the Applicants at this time.

Regarding claims 9-11, Applicants have argued that the DC pulses are not oscillating signals. However, it is well known in the art to have one in place of the other. The artisan knows how the change in signal would influence the output of the device. For instance, Kelly (6018247) discloses in the patent entitled "Time domain

reflectometer linear position sensing" where the pulse signal is converted to an oscillating signal (Column 2, lines 47-55). This shows that it is possible to use DC pulses for oscillating signals as evidenced by Kelly. Meanwhile, Matzuk discloses in the patent entitled "Ultrasonic scanning apparatus" where oscillations are converted to a pulse signal (Column 16, lines 14-29). This shows that it is possible to use oscillating signals for pulses as evidenced by Matzuk. One would use the teachings depending on the application. For example in liquid level measurement for an air craft one would need to convert the intermittent dc signal to a continuous measurement since the operator would need a constant fuel level measurement.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to André K. Jackson whose telephone number is (571) 272-2196. The examiner can normally be reached on Mon.-Thurs. 7AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.J.
July 21, 2005

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